

**TAXONOMIC NOTES AND DISTRIBUTIONAL DATA
ON NEARCTIC SPECIES OF *CRYPTORHOPALUM*
(COLEOPTERA: DERMESTIDAE) WITH DESCRIPTION
OF A NEW SOUTHWESTERN U. S. SPECIES¹**

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ABSTRACT: *Cryptorhopalum brooksi* from southeastern Arizona and southwestern New Mexico is described as new. *Cryptorhopalum anthrenoides* is considered a valid species, removed from synonymy with *C. pruddeni*, and redescribed. *Cryptorhopalum pruddeni* is redefined. SEM details of female abdominal sternum 5 are provided for *C. brooksi* n. sp., *C. distichia*, *C. pruddeni*, *C. sapindi*, and *C. woolfi*. Range extensions are provided for *C. focale*, *C. haemorrhoidale*, *C. uteanum*, and *C. woolfi*.

The following is an addendum to my taxonomic revision of the Nearctic species of *Cryptorhopalum* (Beal, 1985) based on a study of additional material that has been made available to me.

Measurement in length of specimens is made from the front of the pronotum to the apex of the elytra. Measurement in width is made across the humeri.

Cryptorhopalum anthrenoides Casey, 1916, REVISED STATUS

In 1979 I reduced *C. anthrenoides* to synonymy with *C. pruddeni* Casey (1900), an error that was continued in my 1985 revision. Since then I have been able to reexamine the holotype of *C. anthrenoides* and to dissect the terminalia of some specimens virtually identical with the holotype. I found abdominal sternum 8 not only dissimilar to that found in *C. pruddeni* but of a form unknown in any species of the genus thus far studied. Consequently, *C. anthrenoides* must be considered a distinct species and is redescribed as follows.

Adult male: Dorsal integument immaculate, yellowish brown to dark reddish brown. Dorsal pubescence consisting of golden brown and white to creamy white hairs. Elytron with whitish hairs forming humeral patch, submedian and subapical bands, and apical patch; bands sometimes sparse and interrupted; whitish basal hairs sometimes present (Fig. 2). Antennal club ovate.

Head with diameter of punctures of frons at middle about 2/3 diameter of facet of eye, punctures becoming larger at sides and equal to 2 times diameter of facet of eye; punctures mostly not contiguous. Pronotum with punctures of disc about equal in diameter to facet of eye and separated by distance equal to 2 or 3 times diameter of puncture. Antennal club reddish brown; ratio of width to length of segment 10 varying from 1:0.9 to 1:1.0; ratio of length of segment 11 to length

¹ Received April 4, 1995. Accepted April 28, 1995.

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of segment 10 varying from 1:1.3 to 1:1.6; ratio of length of club to length of lateral margin of pronotum varying from 1:1.9. Hypomeron at narrowest point behind antennal fossa as wide as 1 1/6 times width of segments of funicle of antenna. Visible abdominal sternum 1 with 2 oblique striae on each side near middle; striae parallel and extending length of segment. Front tibia widest at middle and tapering slightly to apex.

Sternum of morphological abdominal segment 8 without median cluster of setae at apical margin; lateral lobes digitiform, about as long as 1/2 width of segment; margins of apical 1/2 of each lobe with numerous long and fine setae (Fig. 1). Aedeagus with short, proximally directed, spine-like process on phallosome. Parameres with wide bridge.

Length: 2.1 to 2.6 mm. Ratio of width to length varying from 1:1.40 to 1:1.51.

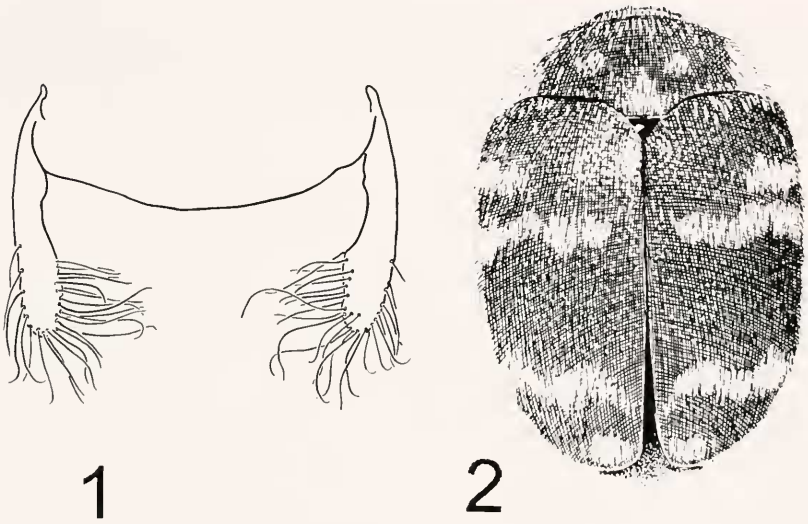
Adult female: As males except that antennal club smaller and width of hypomeron behind antennal fossa about 1 1/7 times as wide as greatest width of front tibia. Visible abdominal sternum 5 with 2 transversely oval maculae 5/11 times as long as visible length of sternum, each about 1.7 times as wide as long; maculae bounded by fine, thread-like, unbroken carina. Length: 2.9 mm. Ratio of width to length: 1:1.20.

Type specimen: The unique male type in the Casey collection of the U. S. National Museum of Natural History (USNM) (No. 37557) bears the label "Ari" with a line drawn above and a line below the letters. In the original description, the specimen is stated to be from the Santa Catalina Mountains, Arizona. Presumably the specimen was taken in the southern foothills of the mountains, possibly at Sabino Canyon.

New Records: ARIZONA: Cochise Co.: Cave Creek Canyon, Chiricahua Mts, 4-VIII-86 (S. M. Fondriest; 1 female, Montana State Univ. coll'n.). Pima Co.: Santa Catalina [Mt.] foothills, 6-IV-68 (K. Stephan, 1 male, Bureau of Entomology, Florida Dept. Agric.); Tucson, 27-IV (Hubbard and Schwarz, 2 males, USNM); *ibid.*, 16-VIII-40 (D. J. and J. N. Knull, 1 male, Ohio State Univ. coll'n.). Yavapai Co.: 2.5 miles upstream from Beaver Creek Ranger Station, 14-VII-69, on mesquite (R. S. Beal, 1 female, Calif. Acad. Sci.). BAJA CALIFORNIA, MEXICO: San Vicente, 8-VII-63 (C. H. Frady, 1 male, Oregon State Univ. coll'n.).

Discussion: The shape of the phallus, the presence of 2 stria on each side of visible abdominal sternum 1, and the presence of submedian and subapical bands and an apical patch of light pubescence on the elytron associate *C. anthrenoides* with the *Quadripunctatum* group of species. In other species of this group for which the terminalia have been described, each lateral lobe of abdominal sternum 8 forms a long, slender, sclerotized, gradually-tapering, medially directed apodeme with small setae along the margins and a single, large seta at the apex. In this species the lateral lobes are weakly sclerotized, somewhat fleshy, slightly clavate, and provided with numerous, long, fine setae.

Males will key to couplet 6 in the "Key to Adult Males of the *Quadripunctatum* Group" in my 1985 revision, a couplet that includes *C. wolffi* and *C. pruddeni*. Generally *C. anthrenoides* can be distinguished from these 2 by



Figs. 1-2. *C. anthrenoides*. 1. Posterior margin of morphological sternum 8. 2. Habitus drawing of male from Santa Catalina Mt. foothills, Arizona.

its more rotund shape and by the much thinner and sometimes interrupted submedian and subapical bands of pale pubescence on the elytra. The male antennal club of *C. anthrenoides* is usually relatively longer and narrower than that of *C. woolfi*, although there is a very small overlap in their ranges (ratio of width to length in *C. anthrenoides* 1:1.6 to 1:1.8; in *C. woolfi* 1:1.4 to 1:1.6). The ratio of width to length will separate known specimens of *C. anthrenoides* (ratio 1:1.40 to 1:1.51) from known specimens of *C. pruddeni* (ratio 1:1.55 to 1:1.75). Females of *C. anthrenoides* will key to *C. pruddeni* in the "Key to Adult Females of the Quadripunctatum Group." The transversely oval maculae on abdominal sternum 5 separates them from females of *C. pruddeni*, in which the maculae are more or less round.

Cryptorhopalum brooksi NEW SPECIES

In 1985 I listed a "Form unnamed near *Cryptorhopalum woolfi*." The male terminalia seemed identical with those of *C. woolfi*, and there was no certainty

that the single female, which was manifestly different from females of *C. wolffi*, was conspecific with the males. Since then some associated males and females have been made available for my study along with a number of specimens from other localities. The form clearly represents a distinct species and is described as follows.

Adult male: Dorsal pubescence consisting of dark golden brown and silvery white hairs; silvery white hairs on elytron forming basal, subbasal, and subapical bands and apical patch. Dorsal integument with head dark brown, pronotum medium brown, and elytra somewhat light brown. Antennal club ovate.

Head with diameter of punctures of frons at middle about 1 1/2 times diameter of facet of eye and separated by 1 to 1 1/2 times diameter of puncture; punctures becoming larger laterally and separated by about 1/2 times diameter of puncture. Pronotum with silvery white hairs on sides and intermingled dark and silvery white hairs on disc, except patch of all dark hairs at middle and small patch at middle half way from midline to lateral margin; punctures of disc about 1/2 times diameter of facet of eye and separated by 3 to 5 times diameter of single puncture. Elytron with basal band well-developed but interrupted by few dark hairs; subbasal band well-developed, extending anteriorly along suture to meet basal band; diagonal line of hairs over humerus connecting basal and subbasal bands laterally, thus basal and subbasal bands enclosing subbasal patch of dark hairs; subapical band well-developed but interrupted by thin line of dark hairs; apical patch prominent; subbasal and subapical bands and apical patch connected along suture by somewhat sparse line of pale hairs, otherwise pale hairs mostly lacking between bands. Antennal club reddish brown; ratio of width to length of segment 10, 1:1.0; ratio of length of segment 11 to length of segment 10, 1:1.3; ratio of width to length of entire club 1:1.84. Hypomer on behind antennal fossa as wide at narrowest point as 1 1/2 times width of segment 4 of antenna. Prosternum without median carina. Visible abdominal sternum 1 with 2 nearly parallel oblique striae on each side extending length of segment from beneath trochanters. Front tibia widest at middle and tapering slightly toward apex.

Sternum of abdominal segment 8 without median cluster of setae at apical margin; lateral apophysis long; seta inserted at apex about as long as apophysis, evenly curving, somewhat clavate at apex; shaft of apophysis with setae on posterior margin only. Phallus with small, anteriorly-directed, spine-like process on phallotreme of aedeagus; parameres with wide bridge.

Length: 2.5 mm; width: 1.5 mm.

Adult female: As male except that pronotum with very small sublateral patch of all dark hairs and small, indistinct, median dark spot of intermingled pale and dark hairs. Elytron with few pale hairs along suture between subbasal and subapical bands and with few scattered pale hairs in space lateral to sutural line between subbasal and subapical bands. Antennal club small. Hypomer on at narrowest point behind antennal fossa subequal to greatest width of front tibia. Visible abdominal sternum 5 with 2 large maculae (Figs. 3, 4), each with diameter about 6/9 visible length of sternum; maculae not enclosed by carinae.

Length: 2.6 mm; width: 1.5 mm.

Range of observed variations: Pale hairs of dorsum varying from silvery white to pale golden, often silvery white on pronotum becoming more golden toward apex of elytra. Dorsal integument light reddish or yellowish to mahogany brown; pronotum sometimes much darker than elytra. Pronotum with dark hairs forming discal spot and sublateral spot; discal spot large and connected with lateral spots or small and separated from lateral spots; lateral spot consisting of very few dark hairs with intermingled pale hairs or distinct patch of all dark hairs; dark hairs often but not always present on basal margin on either side of basal lobe. Elytron usually without any pale

hairs between submedian and subapical band but when present mostly confined to line along suture; subbasal band usually not interrupted, usually more or less irregular in length but not forming 2 distinct patches. Antennal club of male with ratio of width to length of segment 10 varying from 1:0.8 to 1:1.1; ratio of length of segment 11 to length of segment 10 varying from 1:1.1 to 1:1.5; ratio of width to length of club varying from 1:1.5 to 1:1.9. Hypomeron of male at narrowest point behind antennal fossa 1.5 to 2 times as wide as segment 4 of antenna. Visible abdominal sternum 5 of female with length of maculae 5/9 to 6/9 times visible length of sternum.

Length of males ranging from 1.9 to 2.6 mm; of females from 1.9 to 3.3 mm. Ratio of length to width of males and females varying from 1:1.55 to 1:1.78.

Types: Holotype male and allotype female and 5 paratypes: Madera Canyon, Santa Rita Mts., Ariz., 5,400 ft. elev., 18-29-VII 79 (Frank T. Hovore). Additional paratypes as follows: ARI-ZONA: Coconino Co: Oak Creek Canyon, 1-VIII-36 (O. Bryant; 2 females). Cochise Co.: 5 miles SW of Apache, 17-VIII-61 (M. A. Cazier; 1 male); Chiricahua Mts., 4-VIII-86 (M. A. Ivie; 1 female); *ibid.*, 8,000 ft. elev., 7-VIII-55 (G. Butler, Z. Noon; 3 females); *ibid.*, Idlewild Camp, 20-25-VII-80 (R. Turnbow; 1 male, 4 females); *ibid.*, Horseshoe Canyon, 23-VI-75 (S. McCleve, 1 female); Cochise Stronghold, Dragoon Mts., 5-8-VII-70 (R. J. Shaw; 2 males); Huachuca Mts., 9-VI-35 (J. N. Knull; 2 females); *ibid.*, Ramsey Canyon, 5,350 ft. elev., 10-19-VI-66 (F. Werner; 6 males, 1 female); *ibid.*, 13-VII-55 (F. G. Werner & G. D. Butler; 1 male); Palmerlee, 1-VII (H. A. Wenzel; 1 female); *ibid.*, 11-VII (H. A. Wenzel, 1 female). Gila Co.: Pinal Mts., VI (D. K. Duncan). Graham Co.: Ft. Grant, 16-VII (Hubbard & Schwarz; 1 female). Pima Co.: Fraguila Wash, 4 miles S. of Arivaca, 10-VII-77 (S. McCleve; 1 male). Santa Cruz Co.: Atascosa Mts., 19-VIII-50 (R. S. Beal; 1 female); Santa Rita Mts., 16-VI (Hubbard & Schwarz; 2 males); *ibid.*, 31-VIII-65 (C. D. Johnson; 1 male); *ibid.*, 5,000 ft. elev., 18-23-VI-62 (F. Werner; 2 males); Nogales, 17-VIII-06 (F. W. Nunenmacher; 1 female); west slope Patagonia Mts., 7-IX-55 (F. G. Werner & G. D. Butler; 3 females). Yavapai Co.: Lynx Lake, Prescott Nat'l. Forest, 30-VII-69 (G. W. Forster; 2 females). NEW MEXICO: Hidalgo Co., 1706 m, 5-VI-81 (Steve Dobrott; 4 males). Primary types deposited in the U. S. National Museum of Natural History. Paratypes deposited in collections of American Museum of Natural History, Robert J. Brooks, California Academy of Sciences, Colorado State University, Northern Arizona University, Montana State University, Ohio State University, Scott McCleve, Oregon State University, Robert H. Turnbow, U. S. National Museum of Natural History, University of Arizona, University of Mississippi; and R. D. Zhantiev of the M. W. Lomonosov State University of Moscow.

Diagnosis: Females are fairly easily distinguished from other known Nearctic species by the large maculae, which are without a distinct, surrounding, thread-like carina on visible abdominal sternum 5 (Fig. 3). Males usually differ from those of *C. woolfi* in having the antennal club longer and narrower, but there is a degree of overlap: the ratio of width to length varies from 1:1.5 to 1:1.9, whereas the ratio on *C. woolfi* varies from 1:1.4 to 1:1.6. Males and females have all light-colored pubescence on the pronotum, whereas both *C. pruddeni* and *C. woolfi* have a number of dark, golden-brown hairs on the pronotum.

Etymology: The species is named for Robert J. Brooks, M.D., hematologist and oncologist of Tucson, Arizona, as a tribute to his scholarship, skill, and empathetic concern for his patients.

Biology and floral information: The species has been taken on *Chilopsis linearis* (Cav.) Sweet (Bignoniaceae), on *Baccharis glutinosa* Pers. (Com-

positae), and on *Cowania mexicana* D. Don (Rosaceae). Specimens have also been taken at light and in a sugar bait trap. No other information on the biology is available.

Cryptorhopalum distichia Beal, 1985

Under a stereoptican dissecting microscope females of this species and *C. aspilon* Beal appear to lack maculae on visible abdominal sternum 5. Maculae on other species in the Quadripunctatum group are formed by clusters of minute pores which presumably serve for the secretion of pheromones. In *C. distichia* a few such pores are nevertheless present on either side of the sternum, as demonstrated by SEM examination (Figs. 7, 9).

Cryptorhopalum focale Beal, 1985

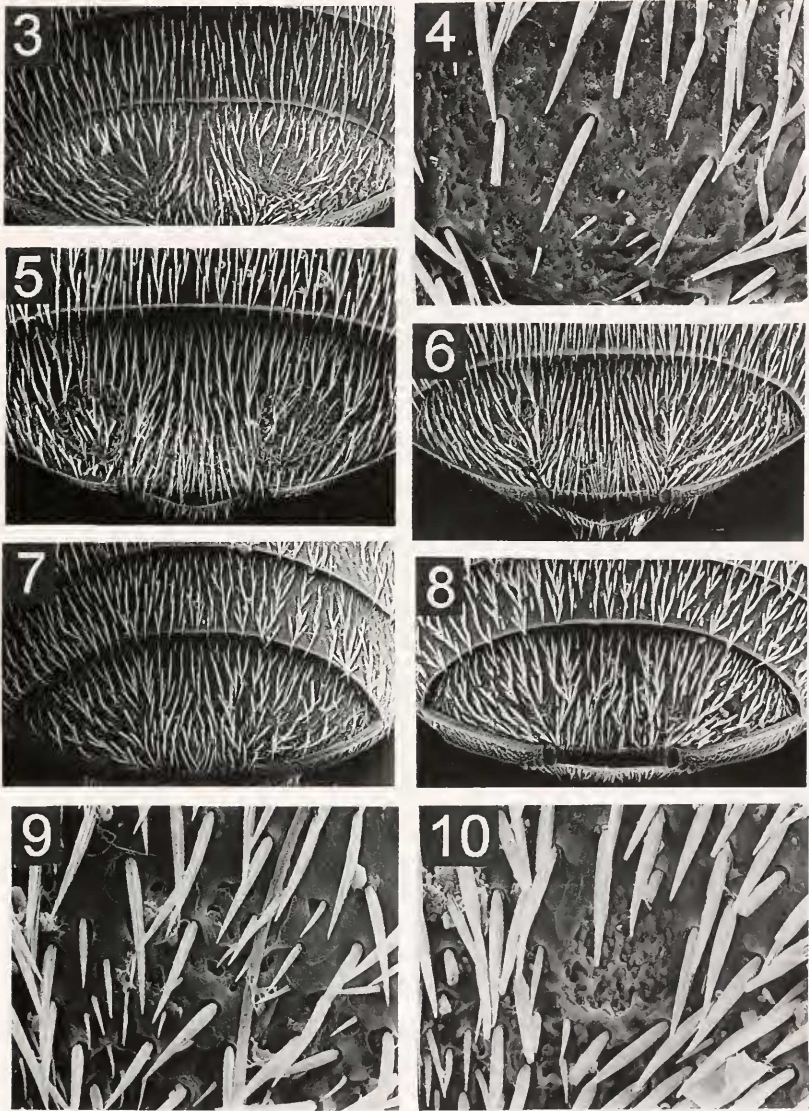
This species was described from 2 specimens taken in the vicinity of Daytona Beach, Florida. The following specimens extend the known range south to Highlands County, Florida. Archbold Biological Station, 3-IV-79 (H. V. Weems, Jr., & Sylvia Halkin; 1 male, USNM; 1 female, Bureau of Entomology, Florida Dept. Agric.); *ibid.*, 10-11-IV-80 (C. L. Smith; 1 female, Univ. Georgia Coll.); 5 miles south of Sebring, 21-III-78 (H. V. Weems, Jr.; 1 male, Bureau of Entomology, Florida Dept. Agric.).

Cryptorhopalum haemorrhoidale (LeConte, 1824)

The following is the first recorded occurrence in Canada: Toronto, Ontario (R. J. Crew; 3 specimens, Cornell Univ. Coll.)

Cryptorhopalum pruddeni Casey, 1900

Robert H. Turnbow collected a series of 108 unusually small specimens of this species on sugar bait in Idlewild Canyon, Chiricahua Mts. (Cochise Co.), Arizona, 20-25-VII-80. This series makes it possible to place a number of small specimens which previously I could not definitely associate with this species. The length of 62 measurable males ranged from 1.8 mm to 2.7 mm with a median length of 2.0 mm. The length of 38 measurable females ranged from 1.9 mm to 2.8 mm with a median length of 2.3 mm. In external measurements and setal pattern the larger specimens of the series seem unmistakably identical with previously described specimens of the species. Smaller specimens tend to have the subapical elytral band uninterrupted and uniform in length across the elytra. Terminalia of both larger and smaller specimens are



Figs. 3-10. Scanning electron micrographs of visible abdominal sternum 5 of females. 3. *C. brooksi*, x 79. 4. *C. brooksi*, detail of macula x 398. 5. *C. pruddeni*, x 79. 6. *C. sapindi*, x 79. 7. *C. distichia*, x 79. 8. *C. woolfi*, x 79. 9. *C. distichia*, detail of macula, x 398. 10. *C. woolfi*, detail of macula, x 398.

identical, as are the maculae on visible abdominal sternum 5 of the female (Fig. 5).

Revised measurements for the species based on the specimens above and restricted by the removal of specimens now assigned to *C. anthrenoides* are the following: length of males ranging from 1.8 mm to 2.9 mm; length of females from 1.9 mm to 3.5 mm. Ratio of width to length of males varying from 1:1.55 to 1:1.75; females from 1:1.52 to 1:1.75.

Cryptorhopalum uteanum Casey, 1914

The known range of the species is extended from Oregon northward to the following localities in the State of Washington: Soap Lake, Grant Co., 21-V-49 (M. R. Hatch; 13 specimens); Vantage, Kittitas Co., 21-v-49 (M. H. Hatch, 1 specimen). The above are deposited in the Oregon State Univ. Coll.

Cryptorhopalum woolfi Beal, 1985

The known range of this species is extended from Southern Arizona into Sonora, Mexico, as follows. 10 miles east of Navajoa, 13-VIII-59 (W. L. Nutting & F. G. Werner; 1 male, 1 female); 5 miles east of Alamos, 11-VIII-73 (K. Stephan & D. S. Chandler; 1 female). Above specimens are deposited in the Univ. of Arizona Coll. A new southeastern Arizona locality is Idlewild Canyon, Chiricahua Mts., Cochise Co., 20-25-VII-80 (R. Turnbow; 1 male, Univ. of Georgia Coll.)

Figures 8 and 10 show the structure of the minute macula on each side of visible abdominal sternum 5.

Cryptorhopalum sapindi Beal, 1985

Females of this species are similar to females of *C. reversum*. The maculae on visible abdominal sternum 5 of the latter have a diameter 1/3 to 1/2 visible length of segment (essentially similar to maculae of *C. pruddeni*, Fig. 5). In *C. sapindi* the maculae are about 3/10 visible length of the segment but also are positioned near the middle of the segment (Fig. 6).

ACKNOWLEDGMENTS

For the generous loan of specimens in their care or kind gift of specimens I am indebted to the following: C. D. Johnson, Northern Arizona University; David H. Kavanaugh, California Academy of Sciences; John W. Kingsolver, formerly with the Systematic Entomology Laboratory, U. S. Dept. of Agriculture; Paul K. Lago, University of Mississippi; J. D. Lattin, Oregon State University; James K. Liebherr, Cornell University; Scott McCleve, Douglas, Arizona; Katherine Seibert, Montana State University; Charles A. Triplehorn, Ohio State University; Robert H. Turnbow, Jr., Directorate of Engineering and Housing, Fort Rucker, Alabama; Howard

V. Weems, Jr., Florida State Collection of Arthropods, Florida Dept. of Agriculture; the late Floyd G. Werner, University of Arizona. I am grateful to Norman Grim of Northern Arizona University for the scanning electron micrographs. For a helpful and critical reading of the manuscript I offer my best thanks to C. D. Johnson of Northern Arizona University and Paul K. Lago of the University of Mississippi.

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SCIENTIFIC NOTE
OVERWINTERING OF *POLLENIA RUDIS*
(DIPTERA: CALLIPHORIDAE)¹

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Members of the genus *Pollenia* are commonly referred to as cluster flies. Taxonomy of some species groups (Rognes 1987, 1991) and their life history (Thomas & Davies 1973a, 1973b) are well documented. The occurrence of clustering in buildings is referred to in nearly all references to *Pollenia* species. However, outside of manmade structures, the winter habits of adults are not well recorded. In fact, a search of pertinent literature returned only one reference. Dennys (1927) reported overwintering adults of *Pollenia rudis* collected from tunnels of "wood borers".

I collected three live adult *P. rudis* from abandoned galleries of *Bolitotherus cornutus* (Panzer) (Coleoptera: Tenebrionidae) in rotting hoof fungi (*Fomes fomentarius* [L. ex Fr.] Kickx). A larva of *B. cornutus* was also collected in a separate piece of hoof fungus. The hoof fungus was growing approximately one meter above the ground on a rotting hardwood stump. Specimen data as follows: 2 ♀ ♀, 1 ♂-USA, New York, Tompkins County, 5 miles S of Danby, 14:I:1995.

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¹ Received March 17, 1995. Accepted March 30, 1995.

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